Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

BULLETIN
OF THE
TORREY BOTANICAL CLUB.

Vol. X.] New York, February, 1883. **[No. 2.**

Fresh-Water Algæ. VII.

By Francis Wolle.

(Plate XXVII.)

The following latest information concerning fresh-water algæ is submitted for the benefit of numerous friends to the cause of microscopical botany, as well as of botanical research in general.

During the past summer there have been abundant additions made to this particular division of the flora of the United States—a result largely due to the kindly assistance of volunteer collectors in the more distant parts of the country, as also of others nearer home. Indeed, but for these, the microscopist would often be at a loss for specimens worthy of his attention. I take pleasure in connection with this in acknowledging the valuable aid received from Rev. H. D. Kitchel, D.D., in working up the material that was gathered from various sources.

As the number of American students of the fresh-water algæ has greatly increased during the past few years, I have yielded to a general desire, and given the diagnosis of new species in the English language. Hitherto our students have been greatly outnumbered by European, and therefore the descriptions were given in a language familiar to all, irrespective of their nationality. With this change I adopt also the metric system of measurements.

In the appended list of new plants, all those credited to Minneapolis, Minn., were collected and forwarded by Miss Eloise Butler of that place. Miss Butler, first a student under Prof. C. E. Bessey of botanical fame, then a member of the Summer School of Science, under Prof. J. C. Arthur of the Iowa Agricultural College, Charles City, has, in her contributions sent me for microscopical investigation, furnished much more that is new than has any other collector this year.

Mr. A. D. Balen, of Plainfield, N. J., has been particularly fortunate in establishing beyond controversy the fact that the tropical alga *Pithophora*, Witt., is not confined to the tropics. Hitherto I have found it only in one small pond in this vicinity, where it was supposed to occur adventitiously. Mr. Balen finds it in three distinct localities within a circuit of about six miles around Plainfield.

Of new foreign literature upon the subject of fresh-water algæ, the following are the most important contributions:

Two volumes of the series Algæ Exsiccatæ have been issued by Prof. V. Wittrock and Dr. Otto Nordstedt of Sweden. The two volumes are the 9th and 10th of the series. Each number contains fifty specimens, European and American, finely mounted. No words can convey so correct an idea of a form as a view of the plant itself.

The third number of Cooke's British Fresh-Water Algæ has appeared.

N. Wille, of Norway, has published a good paper (in Norwegian) on the transitions and developing forms of the Confervaceæ.

M. Ed. Bornet, of Paris, has published a valuable article (in French) on *Mazœa*, a new genus of algæ of the order Crytophycees.

Dr. J. Rostafinski, of Cracow, has published a monograph (in Polish) on *Hydrurus* and its connections.

Prof. G. Lagerheim has made a contribution (in Swedish) to the knowledge of several orders of algæ in the vicinity of Stockholm.

Dr. Paul Richter, of Germany, has put forth a paper (in German) on the question, "Is *Sphærozyga Jacobi*, Ag., a synonym for *Mastigocladus luminosus*, Ktz."

The latest from Prof. A. Borzi, of the University of Messina, Sicily, is the third part of his valuable contributions (Italian) on the Morphology and Biology of the Phycochromaceæ.

For a work on the American fresh-water algæ, I fear the time is not yet ripe to heed the solicitations of friends. It is true, I have added over seven hundred new names to the list of the flora of the United States, but, so long as each returning summer brings an addition of fifty or more new varieties, it would seem well to defer it.

ŒDOGONIUM, Link.—*Œd. Boscii*, Witt. Collected by R. Hitchcock in a pond at Weehawken, N. J. *Œd. Tyrolicum*, Witt. In a pond, Pennsylvania. *Œd. crassiusculum*, Witt. Pennsylvania and New Jersey. *Œd. obsoletum*, Witt. Pennsylvania. *Œd. concatenatum* (Hass.) Witt. Plainfield, N. J., collected by A. D. Balen; also near Bethlehem, Pa. *Œd. Landsboroughi* (Hass.) Witt. Elmira, N. Y. *Œd. princeps* (Hass.) Witt. Minneapolis, Minn.

BULBOCHÆTE, Ag.—*B. Monili*, Witt. & Lund. Collected by A. C. Stokes, Trenton, N. J.

GONATOZYGON, D. By.—*G. asperum*, Ralfs. Ponds, Eastern Pennsylvania.

VAUCHERIA, DC.—*V. tuberosa*, A. Br. Collected by Prof. S. A. Forbes, of the State Laboratory of Natural History, Normal, Ill. The plant was dredged from Lake Michigan, four miles from Chicago, from a depth of 36 feet. This form was first described by the late A. Braun, of Berlin, from specimens found in deep waters, and also in marshy places on the continent of Europe. I have another form, collected by Capt. J. D. Smith in a marsh in Georgia in 1878. The filaments are less than half the size and devoid of the tuber-like stolons; and it is three to five times as dichotomous as the typical form. I will call this var. INTERMEDIA, *n. var.* A third form, var. DELICATISSIMA, *n. var.*, is found on wet planks here, and, during the past summer, occurred in a small pool on the banks of the Susquehanna River, Harrisburg, Pa. The filaments are very thin and measure only 10μ–12μ. The branching is not so frequent, but the constrictions at the base of the branches, and interstitially, are the same. Dr. Rabenhorst questioned the propriety of classifying the typical form, the only one known to him, as a *Vaucheria*. It is very unlike all other forms in the dichotomous branching, in the constrictions, and in the fruit.

OPHIOCYTIUM, Næg.—*O. cuspidatum* (Bailey) Rab. Pond, Mt. Everett, Mass. This plant was discovered by Prof. Bailey more than thirty years ago in a pond in Rhode Island; but it has probably not been seen since. It never received a record in an American publication, and hence this note. The proportions are very unusual for a plant of this genus, the measurements being: diameter, 50μ; length, 150μ; length of aculei at ends of cell, 15μ.

PROTOCOCCUS, Ag.—(A questionable genus.) *P. vestitus*, Reinsch. Ponds, New Jersey and Pennsylvania.

POLYEDRIUM, Næg.—*P. gigas*, Wittr. Ponds, Pennsylvania and New Jersey.

SPIROGYRA, Link.—*S. calospora*, Cleve. Collected by J. Reighard, Ann Arbor, Mich. *S. varians* (Hass.) Ktz. Mountain springs. *S. laxa*, Ktz. Ponds, Pennsylvania.

S. setiformis, var. INEQUALIS, *n. var.*—A peculiar variety of this species, consisting of two sizes of filaments, the one 125μ, the other 80μ in diameter; the two in conjugation. The smaller form has the thickness and the appearance of *S. nitida*, but must be counted a variety of *setiformis*. Sometimes two larger filaments are in conjugation, sometimes two smaller ones; but more frequently a larger and a smaller one are united. The spores in both cases are of the same size; a fruit-bearing cell of the larger filaments is not quite filled with the spore, but a spore-cell of the smaller filaments is usually considerably swollen.

S. Hantzschii, Rab., and *S. fusco-atra*, Rab., the latter probably a form of *decimina*, Mül., both from pools near Harrisburg, Penn.

ZYGOGONIUM, Ktz.—*Z. Ralfsii* (Hass.) Ktz. Ponds and marsh lands of Bucks County, Penn.

PLAGIOSPERMUM, Cleve.—*P. tenue*, Cleve, var. CRASSIUS, *n. var.* Shallow water, Bethlehem, Penn., and Florida.

MOUGEOTIA, D. By.—*M. glyptosperma*, D. By. Pond, Minneapolis, Minn.

GONATONEMA, Wittr.—*C. ventricosum*, Wittr. In shallow water on river shore. *G. notabile* (Hass.) Wittr. In a pond. Both species in the vicinity of Bethlehem, Pa.

These forms agree well, in size of filaments, length of articulations and dimensions of spores, with the plants described; but neither has the geniculate character of the fruiting-cells fully developed; some are perfectly straight and others only slightly crooked.

CLOSTERIUM, Nitzsch.—*C. costatum*, Corda. Ponds, New Jersey and Pennsylvania. *C. nasutum*, Nord. *C. acuminatum*, Ktz. *C. decussatum*, Ktz. The latter agrees with the description, except in size, having only about one-half the dimensions of the form described. It is true to its name.

C. angustatum, Ktz., var. RETICULATUM, *n. var.*—This form differs in having the striæ more or less spirally elongated, often producing a reticulated appearance.

All the above, except the first, are from ponds, Mt. Everett, Mass.

CALOCYLINDRUS, D. By.—*C. diplospora*, Lund. Pond, Mt. Everett, Mass.

C. COSTATUS, *n. sp.* (Plate XXVII., Fig. 26).—Cell ovaliform, with central constriction, nearly twice as long as wide; front view a constricted oval; end view circular. Constriction slight, forming an obtuse angle; membrane longitudinally costate; costæ distinct, 5–7, converging at apices. Diameter of cell 50μ; length, 90μ.

In a pond, Mt. Everett, Mass.

According to some authors, this plant might be classed with *Docidium;* but, lacking the usual inflations at the base of the semicells, it is more properly placed as above.

DOCIDIUM, Bréb.—*D. verrucosum*, Ralfs. Frequent in ponds, Mt. Everett, Mass.

COSMARIUM, Corda.—*C. galeritum*, Nord. Marshes, Pennsylvania. *C. speciosum*, Lund., and *C. pulcherrimum*, Nord.; both rather rare, but they occur occasionally in ponds in New Jersey, Pennsylvania, Massachusetts, and no doubt in all States of the Union. *C. spectabile*, DeNtris. Pennsylvania. *C. reniforme*, (Ralfs.) Arch In Florida, and at Minneapolis, Minn. *C. grande*, Lund. Minneapolis. *C. tithophora*, Nord., and *C. DeBaryi*, Arch.; both from ponds, Mt. Everett, Mass. *C. pyramidatum*, Bréb., var. *stenonotum*, Nord. Minneapolis, Minn.

C. TRIPLICATUM, *n. sp.* (Plate XXVII., Figs. 8 and 8*a*, front and end views).—Cell about one-fourth longer than wide, subrectangular; angles obtuse; sinus between the semicells linear; margins irregularly granulate, crenate; membrane rough with larger and smaller granules; the larger ones arranged in series of three; three on the margin of each of the superior rounded angles; three within the margins and three near the margin, between the angles; at the margins of the inferior angles two larger granules, and, within the margins, a few smaller scattered granules; end view quadrangular-oval, two series, usually of six longer granules, on each of the longer sides; one series on the margin and one within. Diameter of cell, 40μ; length about 50μ. Sporangium spherical, with long spines, acute at the ends.

Ponds, Pennsylvania and New Jersey.

The nearest approach to this plant is *C. Ungerianum*, Næg. It differs in its smaller size, the details of outline, and arrangement of the longer granules.

C. SEELYANUM, *n. sp.* (Plate XXVII., Figs. 14 and 14*a*, front and end views.)—Cell small, quadrangular, deeply constricted; sinus narrow, linear; semicells twice as wide as long, with a small rounded notch in the middle of the sides; the superior angles slightly produced laterally; ends in middle about half the breadth, somewhat produced and crenated; membrane at the superior and inferior angles, and near the margin of the ends, with 3 or 4 granules. Diameter of cell, 25μ–30μ.

Frequent in a pond at Elmira, N. Y.

C. ELOISEANUM, *n. sp.* (Plate XXVII., Figs. 7 and 7*a*.)—Cell rather large, one-third longer than wide; constriction forming a deep, linear, outwardly widening sinus on each side; semi-cells semicircular, margins set with long pointed teeth or aculei; centre inflated and granularly rough, intermediate area smooth or punctate; end view oval; tumor in the centre granular; two distinct longitudinal, nearly parallel rows of teeth or aculei. Diameter, 75μ; length, 100μ.

Pond near Minneapolis, Minn.

C. ACULEATUM, *n. sp.* (Plate XXVII., Fig. 12).—Medium size, suborbicular, length slightly less than the diameter; constriction deep, forming, by the incurving of the angles of the semicells, two elliptical sinuses; membrane primarily more or less densely aculeated; later, the aculei drop off and leave short granule-like stumps. Length of cell, 30μ; breadth, 33μ; breadth of constriction, 10μ.

Pond, Minneapolis, Minn.

The outline of this species bears a resemblance to that of *C. Smolandicum*, Lund., but it is aculeated and devoid of the papilla at the angles of the semicells.

C. amœnum, Bréb., var. TUMIDUM, *n. var.* (Plate XXVII., Fig. 16).—Usually somewhat larger than the typical form; proportions the same, but the sides of the semicells tumid, not "rectis parallelis."

Occasional in ponds in Pennsylvania and New Jersey.

C. EVERETTENSE, *n. sp.* (Plate XXVII., Figs. 25, 25*a* and 25*b*, end, side and front views).—Cell as long as wide; constriction deep linear; semicells broadly rounded at the ends, inferior angles obtuse and close; membrane granular, with large verrucæ arranged in concentric series; apex usually nude, surrounded by short, acute, conical teeth or aculei; end and transverse views showing a decided central inflation. Length and breadth, 50μ–51μ.

Ponds, Mount Everett, Mass.

C. Brebissonii, Menegh., comes nearest, but differs in the form of the verrucæ, their uniform shape, and their even distribution over the cell; it is also without the central inflation.

XANTHIDIUM, Ehrb.—X RECTOCORNUTUM, *n. sp.* (Plate XXVII., Figs. 6 and 6*a*).—Cell as long as wide; constriction linear, somewhat gaping; semicells semicircular, finely punctate, or smooth; two rows of beads above the central protuberance, the one with 6–10 and the other under it with half the number; another series of beads on the base, forming a ring around the isthmus; ends broadly rounded, nude; basal angles armed with two pairs of aculei, one horizontal, subulate, the other vertical, straight, neither curved nor divergent; having the form of an hour-glass when viewed transversely, truncate, crenate at the ends, with two vertical aculei in the centre. Diameter of cell, without spine, 55μ–60μ.

Frequent in ponds, Mount Everett, Mass.

This form differs from *X. antelopæum*, Bréb., its nearest of kin, in having the end of the cells bare, the aculei not incurved or divergent, but straight and erect, attached to the sides and springing from the basal angle. It is also quite unlike that species in the three series of beads and in its transverse view.

ARTHRODESMUS, Ehrb.—A. RAUII, *n. sp.* (Plate XXVII., Figs. 17 and 17*a*, end and front views).—Cell slightly longer than wide, aculeated or verrucose; aculei short and stout, deciduous, leaving, after falling off, large verrucæ, usually six on the margin of each end, and two curved series of six each on the membrane within the margin ; semicells broadly elliptical, with a single straight or diverging aculeus at each end. Diameter of cell, without aculei, 38μ; with aculei, 63μ.

This plant was gathered with *Sphagnum* (bog-moss) by Mr. E. A. Rau in a pond near Newfield, N. J., in the month of August last. It bears some resemblance to *A. divergens*, Rab., but it is not "subtilissime verruculosus ;" also to *A. quadridens*, Wood, but it is twice the size of that plant, and is not *quadridens*.

A. OVALIS, *n. sp.*—Cell small, smooth, about one-fourth longer than wide ; semicells oval, armed at each end with a straight or divergent aculeus. Diameter, without aculei, 20μ.

Ponds, Mount Everett, Mass.

A. Incus, Bréb., comes near this form in size, but is unlike it in its truncate ends.

A. ORBICULARIS, *n. sp.* (Plate XXVII., Figs. 22 and *22a*, front and end views).—Cells very small, smooth, orbicular ; semicells united by a narrow isthmus ; aculei on opposite sides nearly parallel. Diameter, without aculei, 12μ.

Pond, Mount Everett, Mass.

EUASTRUM, Ehrb.—E. MAMMILLOSUM, *n. sp.* (Plate XXVII., Fig. 21).—Cell large, in length twice the diameter ; semicells three-lobed ; basal lobes wide and nearly half as high as the semicell, drawn out in the centre into a narrow column about one-fourth the width of the body, dilated at the end, sinuate, four-parted ; base with six mammiform protuberances ; membrane punctate ; end view oval, with three diverging mammiform prominences at each end. Diameter of centre of cell, 68μ; of the ends, 28μ ; length, 118μ.

Pond, Mount Everett, Mass.

A distinct species ; the protuberances a prominent feature.

E. CUSPIDATUM, *n. sp.* (Plate XXVII., Fig. 18).—Small ; diameter slightly less than the length ; semicells distinctly three-lobed, basal lobes extending laterally their own width ; end lobe subrectangular, twice the width of the other lobes, obtusely sinuate in the centre ; ends of the rounded basal lobes, and of the two sections of the end lobe, surmounted each with three firm, diverging aculei. Diameter of cell, without aculei, 25μ ; length, 33μ.

Pond, Absecom, N. J. Contributed by H. D. Kitchel.

E. binale, var. MAJUS, *n. var.*—In all its details, except size, like the typical form, the dimensions being double the ordinary measurement. Diameter, 40μ ; length, 55μ.

In a pond near Newfield, N. J. Collected by E. A. Rau.

E. inerme, Lund., var. DEPRESSUM, *n. var.*—The standard form is nearly twice as long as wide, but the present form is only one-third longer than wide, and this difference produces a depressed appearance. Diameter, 36μ–40μ; length, 50μ–55μ.

Newfield, N. J. Collected by E. A. Rau.

MICRASTERIAS, Ag.—*M. brachyptera*, Lund., var. AMERICANA, *n. var.* (Plate XXVII., Fig. 19).—Distinguished from the form found in Sweden and described by Lundell, the polar lobe not being inwardly distended, but more or less tapering. The curved points on the apices of the lateral lobules are usually in pairs, not in threes.

The arrangement of the aculei on the membrane of the cell is also distinct. The size is very nearly the same, the width being 150μ and the length 190μ.

Collected in a pond near Minneapolis, Minn.

M. conferta, Lund., var. HAMATA, *n. var.* (Plate XXVII., Fig. 1).—The polar lobe is not *conferta*, compact, close against the adjoining lobes, as in the original form, but widely separated in the middle by a deep notch or contraction below the apex, thus giving the lobe a hamate form. Diameter, 88μ–100μ, slightly longer than wide.

Ponds, Mount Everett, Mass.

M. PSEUDOTORREYI, *n. sp.* (Plate XXVII., Fig. 2).—Large, circular, five-lobed ; basal and intermediate lobes bisected, sections more or less conical, ends truncate and deeply furcate ; polar lobe broadly cuneate, end truncate, slightly sinuate, angles cuspidate. Diameter of cell, 180μ.

Mount Everett, Mass.

Separated from *M. Torreyi*, Bailey, by its smaller size and the less number of lobules, and their greater similarity of form.

M. pseudofurcata, Wolle, var. MINOR, *n. var.* (Plate XXVII., Fig. 4).—Only half the size of the typical form, and in structure firmer. Diameter, 63μ–75μ.

Minneapolis, Minn.

STAURASTRUM, Mey.—*St. striolatum*, Næg., and *St. pygmæum*, Bréb., var. *obtusum*, Wille, in quiet waters, Pennsylvania. *St. spinosum*, Bréb., and *St. aculeatum*, Ehrb., both from Minneapolis, Minn.

ST. PANICULOSUM, *n. sp.* (Plate XXVII., Figs. 3 and 3*a*, front and end views.)—Cell sexangular, as long as wide ; semicells truncated triangles, angles rounded ; inferior angles bearing two short, straight aculei ; end view triangular, one aculeus visible on each rounded angle ; sides moderately convex ; membrane punctate, punctules in radiating lines. Diameter, 40μ–50μ.

Marsh pool near Bethlehem, Pa.

ST. DUPLEX, *n. sp.* (Plate XXVII., Figs. 10 and 10*a*).—Of equal length and breadth, subquadrangular ; constriction deep, enlarged outwardly ; angles rounded, furnished with two short, stout processes, ends truncate, granulate or spinous ; end view triangular, sides straight or concave, angles divided and drawn out into two short, somewhat divergent processes, ends furnished with three or four very small teeth. Diameter, 20μ–25μ.

Pools on shore of river, Bethlehem, Pa.

The end view has a resemblance to Nordstedt's *St. gemelliparum*, but the front view is distinct.

ST. EXIGUUM, *n. sp.* (Plate XXVII., Figs. 23, 23*a* and 23*b*.)—Very small, smooth or punctate ; semicells subcuneate, sides slightly rounded, ends truncate ; superior angle produced into straight, divergent arms nearly as long as the diameter of the cell ; ends forked ; viewed from the end, triradiate. Diameter, including arms, 20μ–25μ.

Frequent in ponds, Mount Everett, Mass.

This minute form is nearest *St. gracile*, Ralfs, but differs in its smaller size and smoother membrane.

St. leptocladum, Nord., var. SINUATUM, *n. var.* (Plate XXVII., Fig. 24).—Differs from the typical form in the arms being more divergent, and in the emarginate apex.

ST. ELOISEANUM, *n. sp.* (Plate XXVII., Figs. 9 and 9*a*, front and end view.)—Small, equal in length and breadth, smooth or finely punctate; sinus produced by the constriction an acute angle; semicells subhexagonal, basal and superior angles produced into two short processes; bifurcate at the ends; end view circular, margin with nine (usually) short processes, ends notched. Diameter, 22μ–30μ.

Minneapolis, Minn.

This plant has some resemblance to *St. spinosum*, Bréb., but the processes are less conspicuous and the apices less distended. The end view is entirely distinct in being circular.

St. megacanthum, Lund., var. CONVERGENS, *n. var.* (Plate XXVII., Figs. 13 and 13*a*, front and end views.)—Unlike those of the typical form, the aculei are convergent and sometimes cross each other, being set nearly at right angles with the long axis of the semicells. The plant is also somewhat smaller. It reminds one of *St. Dickiei*, Ralfs, but it is not so turgid, and the aculei are much longer and stouter. Diameter, without the aculei, 38μ-45μ.

Minneapolis, Minn.

ST. TRIHEDRALE, *n. sp.* (Plate XXVII., Figs. 20 and 20*a*, front and oblique views).—Small, punctate granulate; semicells, in front view and in end view, triangular, angles rounded, sides concave, sinus narrowly linear. Diameter, 30μ.

Pond, Mount Everett, Mass.

This species, in its front view, partakes much of the appearance of a *Cosmarium*, near *retusum*, Perty, and *angustatum*, Nord., but the side and end views are distinct. The semicells are three-sided pyramidal forms unlike those of a *Cosmarium.*

St. vestitum, Ralfs., var. DISTORTUM, *n. var.* (Plate XXVII., Figs. 15 and 15*a*).—Separated from the typical plant by its unsymmetrical form, irregularly arranged vesture, and deeply notched margins.

Collected in the vicinity of Minneapolis, Minn.

St. Sebaldi, Reinsch, var. SPINOSUM, *n. var.* (Plate XXVII., Fig. 11). —The spine protruding near the margin of the sides of each semicell is a peculiarity worthy of note.

Minneapolis, Minn.

St. furcigerum, Bréb. (Plate XXVII., Figs. 5 and 5*a*, end and front view).—This plant is figured as a specimen of a variety. It differs from the many forms observed heretofore, in the triradiate arrangement and the long arms on the centre of the cells in the end view. The arms are usually six in number, and much shorter.

Minneapolis, Minn.

TOLYPOTHRIX, Ktz.—*T. tenuis*, Ktz. Ann Arbor, Mich., collected by J. Reighard; and Plainfield, N. J., collected by A. D. Balen.

CALOTHRIX, *Ag.*—*C. mirabilis* (Dillw.) Ag. Minneapolis, Minn. Thuret claims this plant for his new genus *Plectonema.* The present plant is a true *Calothrix* and answers to the diagnosis of *mirabilis.*

HYPHEOTHRIX, Ktz.—*H. luminosa*, Rab. Ponds, Pennsylvania.

ANABÆNA, Bory.—*A. circinalis*, Rab. Floating on a pond, Minneapolis, Minn. A distinct variety.

New Species of Grasses.

By George Vasey.

Agrostis tenuis.—Perennial, loosely tufted. Culms 6 to 10 inches high, slender, somewhat geniculate below; leaves 1 to 2 inches long, narrow, about 2 on the culm; ligule short. Panicle pyramidal, open, 2 to 3 inches long and 1 to $1\frac{1}{2}$ wide; rays in threes or fives below, above in twos or single, capillary, the longest an inch or more in length, flowering above the middle, spreading or erectish. Spikelets very small (less than a line long); glumes acute, purplish, lower one a little shorter and broader; flowering-glume thin, obtusish, 3-nerved above, a little shorter than the outer glumes, unawned; palet very minute or wanting.

Collected on the San Bernardino Mts., California, by the Parish Brothers.

Agrostis humilis.—Perennial, tufted. Culms 4 to 6 inches high, naked above, 1 to 2 leaves below the middle; leaves mostly at the base, 1 to 2 inches long, narrow, not rigid, mostly erect; ligule short, auricled. Panicle 1 to $1\frac{1}{2}$ inches long, narrow and few-flowered, branches short, mostly in threes below, above in twos or single, appressed, the larger branches subdivided and with two to five spikelets. Spikelets purple, less than a line long, outer glumes ovate-lanceolate, acute, smooth; flowering-glumes nearly as long as the outer ones, five-nerved, minutely toothed at the apex, unawned; palet hyaline, two-thirds as long as its flowering-glume.

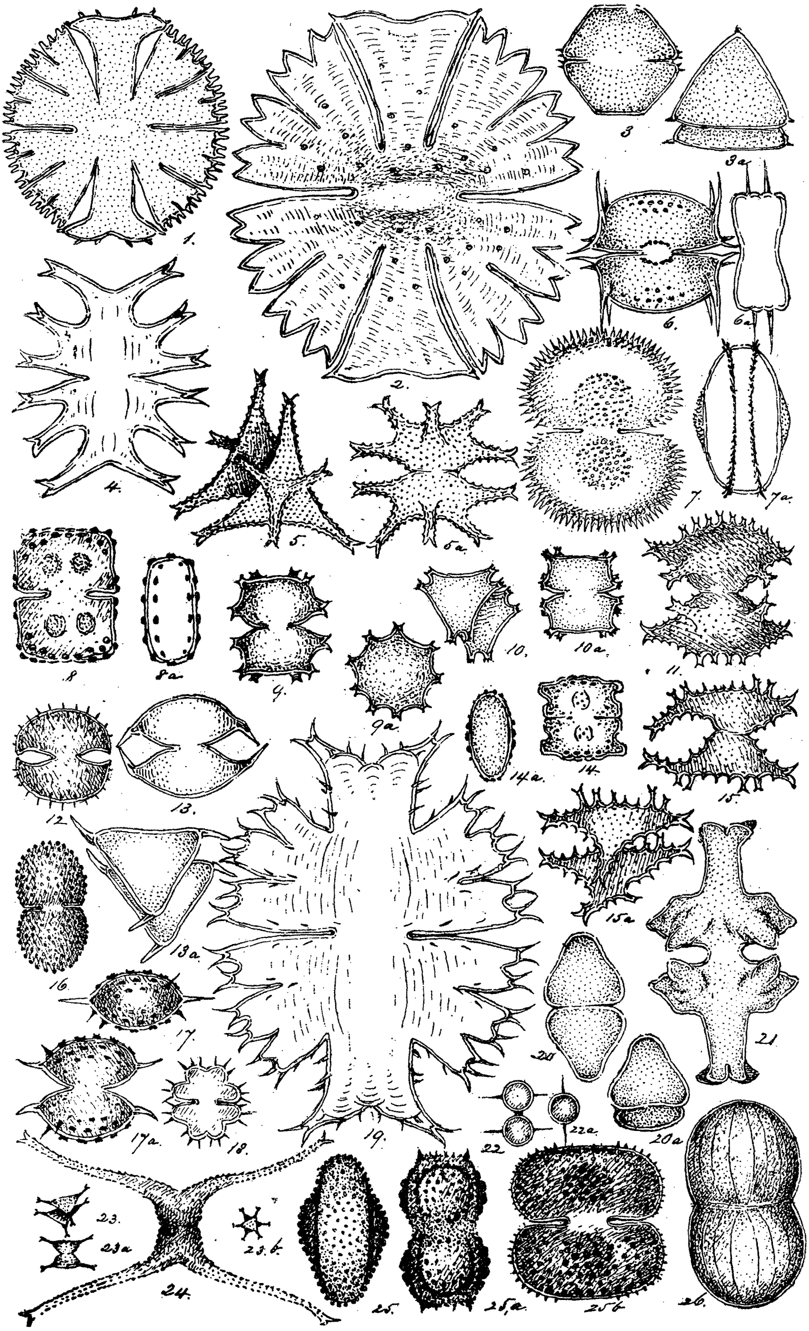
Has the appearance of small forms of *A. varians*, but that species has *no* palet. Found by W. N. Suksdorf on Mt. Paddo, Washington Territory, and by Mr. Howell on Mt. Adams. Grows in compact tufts in moist places.

New Western Lichens.

By Edward Tuckerman.

Lecidea Brandegei, *sp. nov.*—Thallus rugose-plicate, straw-colored; apothecia ample ($1^{\text{mm.}}$,5 to $3^{\text{mm.}}$ in width), beneath mostly free, flat, soon becoming wavy, the disk very black and opake, the originally pale margin soon blackening and lobulate-crenate, bright, and then demiss and disappearing, the hypothecium colorless. Spores short-ellipsoid, simple, 0,06–$11^{\text{mm.}}$ long, and 0,004–$6^{\text{mm.}}$ wide. Spermatia short-acicular, more or less bowed, 0,010–$16^{\text{mm.}}$ long, and less than $0{,}001^{\text{mm.}}$ in thickness. Paraphyses distinct at length, and bluish- then brown-capitulate.

Upon rocks, Rocky Mountains, near St. Elmo, Colorado, T. S. Brandegee, in herb. Sprague. With the features, originally, of *Lecanora*, and the apothecia always showing, in section, the gonidial layer; but the natural affinity of the lichen is none the less with the



NEW AMERICAN FRESH-WATER ALGÆ.